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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/583,857	06/21/2006	Christophe Martinez	292623US2PCT	8598
22850	7590	03/18/2010	EXAMINER	
OBLON, SPIVAK, MCCLELLAND MAIER & NEUSTADT, L.L.P. 1940 DUKE STREET ALEXANDRIA, VA 22314			ANDERSON, GUY G	
			ART UNIT	PAPER NUMBER
			2883	
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			03/18/2010	ELECTRONIC

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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<b>Office Action Summary</b>	<b>Application No.</b>	<b>Applicant(s)</b>	
	10/583,857	MARTINEZ, CHRISTOPHE	
	<b>Examiner</b>	<b>Art Unit</b>	
	Guy G. Anderson	2883	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 26 January 2010.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 25-49 is/are pending in the application.
- 4a) Of the above claim(s) 27 and 35-48 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 25, 26, 28-34 and 49 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 June 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                    | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____                                      |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)         | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                          |

## **DETAILED ACTION**

### **Response to Arguments**

- 1.1 Regarding the rejections of claims 25-26, 28-34, applicant argues "In the outstanding Office Action, Claims 25, 26, and 28 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ramadas (U.S. Patent No. 6,477,291) in view of~ (U.S. Patent No. 6,097,859); Claims 29-34 were rejected under 35 U.S.C. § 103(a) as unpatentable over Ramadas in view of Solgard, and further in view of Ma (U.S. Patent No. 7,236,660) and Ducellier (U.S. Patent No. 7,236,660). With respect to the rejection of Claim 25 as unpatentable over Ramadas in view of Solgard, Applicant respectfully traverses this ground of rejection. Claim 25 recites, inter alia, "a selection module including at least one selection element configured to select a single optical channel from among a set of at least two optical channels of the first optical lines or second optical lines and not any other optical channel of the set, the optical channels of the set having a same rank, the selection element including at least one deviation element associated with at least one deflection element configured to assume plural angular positions, the selection of the single optical channel being made according to an angular position of the deflection element."
- Ramadas and Solgard do not disclose or suggest every element of Claim 25. Fig. 2 of Ramadas shows an optical switching system 200. Apparatus 207 couples incoming fiber bundles 213 to outgoing fiber bundles 215. Fiber bundles 213 include channels 209 and fiber bundles 215 include channels 219. Ramadas does not disclose the claimed "select a single optical channel from among a set of at least two optical channels..., and not any other optical channel of the set." Out of the plurality of optical channels 209, there is no description in Ramadas of only selecting one of the optical channels and not any other optical channels in set 209. Out of the plurality of optical channels 219, there is no description in Ramadas of only selecting one of the optical channels and not any other optical channels in set 219.

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Page 3 of the Office Action states "See also entire disclosure for relevance pertaining to applicants limitations regarding the ranking and selection of signal." Ramadas has been reviewed and does not disclose the claimed "select a single optical channel from among a set of at least two optical channels.., and not any other optical channel of the set." Moreover, such a statement in the Office Action is in violation of 37 CFR § 1.104, which states "The examiner's action will be complete as to all matters," and "When a reference is complex or shows or describes inventions other than that claimed by the applicant, the particular part of relied upon must be designated as nearly as practicable. The pertinence of each reference, if not apparent, must be clearly explained and each rejected claim specified."<sup>1</sup>

Page 3 of the Office Action refers to col. 4, lines 44-67 and col. 5, lines 1-5 of Ramadas. This section of Ramadas does not disclose the claimed "select a single optical channel from among a set of at least two optical channels...and not any other optical channel of the set." The reference to a control device 205 does not render the claimed "select a single optical channel from among a set of at least two optical channels...and not any other optical channel of the set" obvious. A position that the Ramadas control device can be modified to arrive at the claimed device is insufficient to establish a prima facie case of obviousness.<sup>2</sup>

Also, it is not clear that the Office has considered the claimed "select a single optical channel from among a set of at least two optical channels...and not any other optical channel of the set." MPEP §2114 states that functional limitations defining structure by the function performed by that structure are valid claim limitations that this section instructs "must be evaluated and considered, just like any other limitation of the claim ...."

It is well established that each word of every claim must be given weight. See In re Wilson, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

Solgard does not cure the above-noted deficiency in Ramadas. Solgard describes a multi-wavelength cross-connect optical switch. Solgard states: In this switch 10, the wavelength channels 12a, 12b, 12c of three input fibers 14a, 14b, 14c are

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collimated and spatially dispersed by a first (or input) diffraction grating- lens system 16. The grating-lens system 16 separates the wavelength channels in a direction perpendicular to the plane of the paper, and the dispersed wavelength channels are then focused onto a corresponding layer 18a, 18b, 18c of a spatial micromechanical switching matrix 20. The spatially reorganized wavelength channels are finally collimated and recombined by a second (or output) diffraction grating-lens system 22 onto three output fibers 24a, 24b, 24c.<sup>3</sup>

Rather than select a single optical channel, the above-noted paragraph of Solgard describes how the diffraction gratings separate wavelength channels, which is not the same as selecting a single wavelength channel (and not selecting any of the other optical channels in the set) according to an angular position of a deflection element. Elements 16, 22, 18a, 18b, and 18c of Solgard do not equate to a selection element that selects a single optical channel from among a set of at least two optical channels of the first optical lines or second optical lines.

In Solgard, there is no selection of a single wavelength channel (12a, 12b, or 12c). Each of layers 18a, 18b, and 18c of the switching matrix does not select only a single optical channel. Each layer includes six micro mirrors 46a to 46f arranged in two columns 48a and 48b. They can be individually controlled so as to optically "couple" any of the three input fibers 14a, 14b, and 14c to any of the three output fibers 24a, 24b, and 24c.<sup>4</sup> Fig. 2 of Solgard illustrates layer 18a. Any incident light beam among three possible

incident light beams is deviated and can take at the output any position among three possible output positions. There is no particular position of the micro mirrors that selects only a single optical channel of a set and does not select any other optical channel of the set. The six micro mirrors of Solgard do not allow the selection of a single optical channel from among a set of at least two optical channels.

Thus, Solgard does not disclose or suggest at least the claimed "select a single optical channel from among a set of at least two optical channels...and not any other optical channel of the set."

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Since neither Ramadas nor Solgard disclose the claimed "select a single optical channel from among a set of at least two optical channels.., and not any other optical channel of the set," a person of ordinary skill in the art could not properly combine Ramadas and Solgard to arrive at the invention defined by Claim 25.

In view of the above-noted distinctions, Applicant respectfully submits that amended Claim 25 (and any claims dependent thereon) patentably distinguish over Ramadas and Solgard, taken alone or in proper combination.

Addressing each of the further rejections, each of the further rejections is also traversed by the present response as no teachings in any of the further cited references to Ma and Ducellier can overcome the above-noted deficiencies of Ramadas and Solgard.

Moreover, withdrawn Claims 27 and 35-46 depend directly or indirectly from Claim 25. Thus, Claims 27 and 35-46 should be rejoined and allowed with Claim 25.

Consequently, in light of the above discussion and in view of the present amendment, the present application is believed to be in condition for allowance and an early and favorable action to that effect is respectfully requested."

[Applicants remarks pages 7-11, omitting footnotes.]

- 1.2 Examiner disagrees. Applicant argues strenuously and repeatedly that neither Ramadas nor Solgard teaches or discloses the limitation "select a single optical channel from among a set of at least two optical channels of the first optical line or the second optical lines and not any other optical channel of the set...".
- 1.3 Ramadas clearly teaches this limitation at Col. 2, lines 30-40. "In a specific embodiment, the invention provides an optical system for switching **one of a plurality** of optical signals through a MEMS based cross-connect device. The system has **first fiber input/output device and second fiber input/output device**. An optical cross-connect device is coupled between the first fiber input/output device and the second fiber input/output device. **A communication control device is adapted to identify a wavelength from either one of the first input/output device or the second fiber input/output device and selecting one**

**of the first input/output devices for transmitting internal information to a second optical switch system.”**

- 1.4 The rejections are maintained.

**Response to Amendment**

***Claim Rejections - 35 USC § 112***

- 2.1 The following is a quotation of the second paragraph of 35 U.S.C. 112:  
The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

- 2.2 Claim 49 is rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

The claim limitation “wherein the deviation element is configured to cause wavelengths of light of the set of the at least two optical channels to converge at a same point of the deflection element, and the deflection element is configured to have an angular position that causes a wavelength of light of the single optical channel to proceed to a user device and to cause wavelengths other than the wavelength of light of the single optical channel to be prevented from reaching the user device” is unclear to examiner. Since wavelengths of light of at least two optical channels are converging at the same point at the deflection element, applicant needs to clarify how the deflection element causes only one wavelength to be routed to a user device while rejecting all other wavelengths.

**Claim Rejections - 35 USC § 103**

- 3.1 The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:  
(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

- 3.2 **Claim 25-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over US-6477291 to Ramadas in view of US-6097859 to Solgaard.**

**Regarding claim 25**, Ramadas discloses a method and system for in band connectivity for optical switching applications comprising:

Claim 25a) An optical switch configured to be mounted between first optical lines [Fig. 2, #213], each including one or more optical channels having a rank within their optical line [Fig. 2, #207], and one or more second optical lines [Fig. 2, #215], each including one or more optical channels having a rank within their optical line, each of the optical channels being configured to convey a light beam, the optical switch comprising [See also Col. 4, lines 44-67, Col. 5, lines 1-5]: selection means including at least one selection element configured to select a single optical channel from among a set of at least two optical channels of the first optical lines or second optical lines and not any other optical channel of the set, the optical channels of the set having a same rank [Fig. 2, #207], and connection means for coupling the selected optical channel to one of the channels of the second optical lines or of the first optical lines respectively, so that the light beam of the selected single optical channel only reaches one of the optical channels of the second optical lines or of the first optical lines. [Fig. 2, #201, 202, 205, 209, 211, 213, 215, 217, 219, Col. 4, lines 44-67, Col. 5, lines 1-5, for discussion of how optical signals are communicated and switched from one input fiber to an output fiber. See also entire disclosure for relevance pertaining to applicants limitations regarding the ranking and selection of signals.]

Ramadas does not specifically disclose:

25b) the selection element including at least one deviation element associated with at least one deflection element configured to assume plural angular positions, the selection of the single optical channel being made according to an angular position of the deflection element.



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Solgaard discloses a multi wavelength cross connect optical switch comprising a deflection element [Fig. 1, #18a-c] and associated deviation elements [Fig. 1, #42, 44] as a means to provide improved cross talk rejection.

Further Ramadas teaches that the invention is applied to MEMS based cross connect device. Col. 2, lines 20-35]

Since Ramadas and Solgaard are from the same field of endeavor, the structure of Solgaard would have been recognized as being in the pertinent art of Ramadas.

Therefore, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the structure of Solgaard with the structure of Ramadas in order to achieve improved cross talk rejection.

**Regarding Claim 26**, both Ramadas and Solgaard disclose:

26) The optical switch as claimed in claim 25, wherein it is reversible.

[Ramadas at Fig. 2, and Solgaard at Fig. 1; the system is reversible from input to output and vice versa.]

3.3 **Claim 28 is rejected under 35 U.S.C. 103(a) as being unpatentable over US-6477291 to Ramadas in view of US-6097859 to Solgaard.**

**Regarding claims 28**, Ramadas does not specifically disclose:

Claim 28 (New): The optical switch as claimed in claim 25, wherein the deviation element is a deviation lens, and the deflection element is disposed at the focal point image of the deviation lens.

However, Solgaard discloses light beams focused onto a deviation element [grating #42], which focal spot is then the object for the deflection element [MEMS #18a-c]. This would appear to meet applicant's limitations as stated. Other arrangements with varying focal points as objects would be obvious to one skilled in the art of optical element design.

3.4 **Claim 29-34 are rejected under 35 U.S.C. 103(a) as being unpatentable over US-6477291 to Ramadas in view of US-6097859 to Solgaard in view of US-6567574 to Ma in view of US-7236660 to Ducellier.**

**Regarding claims 29-34**, Ramadas does not specifically disclose:

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Claim 29 (New): The optical switch as claimed in claim 25, wherein each of the at least one selection element is combined into one or more selection modules.

Claim 30 (New): The optical switch as claimed in claim 29, wherein each selection module includes N selection elements connected in parallel, the deviation elements and the deflection elements of the N selection elements being arranged as small rods of N elements.

Claim 31 (New): The optical switch as claimed in claim 29, wherein the connection means is located between two selection modules.

Claim 32 (New): The optical switch as claimed in claim 29, wherein the connection means is located after a selection module.

Claim 33 (New): The optical switch as claimed in claim 25, wherein the connection means includes at least one optical connection in free or guided space.

Claim 34 (New): The optical switch as claimed in claim 33, wherein the optical connection in free or guided space comprises at least one small rod of lenses.

Ma discloses a modular three dimensional optical switch with at least two selection modules. [Abstract, Fig. 1]

Further, Ma discloses that free space systems are advantageous designs. [Col. 1, lines, 58-67]

Ducellier discloses that rod lens can be used. [Col. 12, lines 1-5]

Since Ma, Ducellier and Ramadas are from the same field of endeavor, it would have been obvious to one of ordinary skill in the art at the time of the invention to combine the modular approach of Ma and to the system of Ramadas as a means to provide a scalable economic system.

Further, choosing lens types such as rod, cylindrical, ball etc, would have been an obvious step in the design process for one of ordinary skill in the art.

3.5 **Claim 49 is rejected under 35 U.S.C. 103(a) as being unpatentable over US-6477291 to Ramadas in view of US-6097859 to Solgaard in view of US-6567574 to Ma in view of US-7236660 to Ducellier.**

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Claim 49 (New). The optical switch as claimed in claim 1, wherein the deviation element is configured to cause wavelengths of light of the set of the at least two optical channels to converge at a same point of the deflection element, and the deflection element is configured to have an angular position that causes a wavelength of light of the single optical channel to proceed to a user device and to cause wavelengths other than the wavelength of light of the single optical channel to be prevented from reaching the user device.

Solgard and Ducellier disclose this limitation. [Solgard at Fig. 1, and Ducellier at Fig. 3a.]

### ***Conclusion***

- 4.1 Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).
- 4.2 A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.
- 4.3 Any inquiry concerning this communication or earlier communications from the examiner should be directed to Guy G. Anderson whose telephone number is 571.272.8045. The examiner can normally be reached on Tuesday-Saturday 1400-2200.
- 4.4 If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Mark Robinson can be reached on 571.272.2319. The fax phone

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number for the organization where this application or proceeding is assigned is 571-273-8300.

- 4.5 Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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